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Austral. Syst. Bot. Soc. Newsletter 47 (June 1986)

CLADISTICS, PHENETICS AND THE THREDBO BODEN CONFERENCE ON LARGE GENERA

S.D. Hopper

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I disagree with the suggestion that nothing new developed at the recent Boden Conference at Thredbo (Austral. Syst. Bot. Soc. Newsletter 46, p. 27, March 1986). It was one of those rare occasions when a large gathering of Australian systematic botanists of various philosophical persuasions had an opportunity to discuss a common problem in the company of several colleagues from overseas.

It was the diversity of approaches to the generic problem that I found particularly stimulating at the workshop. Practitioners of classical alpha taxonomy, biosystematics, numerical phenetics and cladistics were placed together in a situation conducive to a spirited exchange of ideas. Such workshops are to the benefit of our science, and I for one am grateful to Bryan Barlow and his committee for making it happen.

This note explores an issue that was central to many of the informal discussions to which I was a party at the conference. It was argued persuasively by several participants that at least one rigorous criterion could be applied in recognising taxa at any level in the hierarchy above species - the criterion of monophyly. Put another way, demonstrably polyphyletic lineages should not be united under the same taxon. (The case of paraphyletic taxa raised by Bill Barker at the conference deserves special consideration and will not be discussed further here).

Methods for developing phylogenetic hypotheses that are falsifiable are central to the scientific implementation of the criterion of monophyly. Proponents of cladistics at the conference advocated that their methodologies are superior in this regard to those used in numerical phenetics or classical alpha taxonomy. When questioned as to the basis of this belief, various answers were forthcoming, but none included the demonstration that cladistic methods have been shown to provide a more accurate cladogram than phenetic methods in cases where the true phylogeny is known. To me, such empirical tests are central to resolving the cladistics/phenetics debate.

Soon after returning home from Thredbo, I came across a paper by Sokal (1985) that summarises a research program aimed at this central issue. Sokal and his colleagues have used an artificial data set, the Caminalcules devised by the late Professor Joseph Camin, to test the accuracy of cladogram estimation using the UPGMA phenetic algorithm as against Wagner parsimony cladistic methods. The Caminalcules have a known phylogeny, but are artificial organisms. Sokal found that the Caminalcules were within the range of variation of 19 zoological data sets in terms of homoplasy, symmetry, adequacy of the character states for resolving the cladogram, evolutionary rates, species' longevities, and the ratio of speciation to extinction. Hence, he argued that conclusions drawn concerning cladistic and phenetic analyses of the Caminalcules were relevant to living organisms.

There are 29 extant species of Caminalcules and 48 fossil species. The 29 extant species are defined by 85 characters, but 106 characters are necessary to describe all of the species including the fossils. Alpha taxonomic and numerical phenetic analyses of the data set have divided the Caminalcules into five major groups or genera.

Sokal's major conclusions are as follows:

1. When all characters are used, cladistic methods (Wagner trees) estimate the true phylogeny better than phenetic methods (UPGMA trees).
2. With fewer characters, however, phenetic methods give closer estimates to the true cladogram than do cladistic methods.
3. Neither cladistic nor phenetic methods correctly estimates the entire phylogenetic tree.
4. Cladistic estimates of the true cladogram are seriously affected by the input order of the OTUs to the computer program.
5. Shorter trees tend to give better estimates of the true phylogeny, but this is only a trend - some of the shortest trees deviate appreciably from the best estimates, and conversely, some of the best estimates are longer than the shortest tree. (The true tree length is 321 evolutionary units, but the cladistic method produced trees as short as 211 units.)
6. Cladistic estimates are affected almost as much by homoplasy and unusual divergence as the phenetic estimates.
7. As the number of characters decreases or the number of OTUs increases, phenograms become better estimates of the true phylogeny than do estimated cladograms.
8. The topology of the true tree is a critical factor in determining the quality of its estimate by either methodology.

On the basis of these studies, both phenetic and cladistic methods may have something to offer in the elucidation of phylogeny in any group of organisms. Neither methodology is demonstrably superior in giving a more accurate estimate of phylogeny in all cases. It depends on the data set and the actual pathway of evolution that was followed in a given group.

Sokal concludes his review with the proposal that:

"Under less than optimal conditions (i.e., with few characters or many OTU's), it would appear that a phenetic classification would continue to be the most desirable system for establishing general classifications because it permits greater stability and possibly greater predictive value than a cladistic classification. For those whose major purpose is to estimate phylogenies, phenograms would in many cases give estimates of the true cladogeny that are no worse, and possibly better, than those obtained by current cladistic methods."

I wonder how many of the participants at Thredbo would concur with Sokal's view?

ACKNOWLEDGMENTS

I am grateful to many colleagues for discussions of ideas relevant to this note, but particularly Jim Armstrong, Peter Weston, Mike Crisp, Pauline Ladiges and Bill Barker for stimulating debate at Thredbo.

REFERENCE

Sokal, R.A. (1985). The continuing search for order. Amer. Nat. 126: 729-749.

EXTENSIONS OF RANGES FOR NATURALISED AGAVE
(AGAVACEAE) AND CROCOSMIA (IRIDACEAE)

P.I. Forster
Botany Department, University of Queensland,
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In the Flora of Australia account of the Iridaceae (Cooke, 1986), the naturalised Crocasmia X crocosmiifolia (Lemoine ex Morren) N.E.Br. is recorded from South Australia, Victoria, Tasmania and New South Wales as far north as the Blue Mountains. Material of this garden plant is also naturalised in south-east Queensland along creek banks [P.I. Forster 2284 & L.H. Bird: 26 Jan 1986, MOUNT LINDESAY 9441-573770, 28°14'S, 152°34'E (BRI, CANB)] and is common in places near old gardens or wasteland in suburban Brisbane (D. Fawcett, pers. comm. 1986).

Agave americana L. var. expansa (Jacobi) H.Gentry was recorded in the Flora account (Pedley & Forster, 1986) as only occurring in suburban Brisbane. However it has now been collected from South Australia [J.G. Conran 302: 12 Sep 1985, 2km E of Truro (AD, BRI, MUCV)].

REFERENCES

Cooke, D. A. (1986). Iridaceae, Flora of Australia 46: 1-66.

Pedley, L. & Forster, P. I. (1986). Agavaceae, Flora of Australia 46: 71-88.

COLVILL'S CATALOGUES

A.D. Chapman, Bureau of Flora and Fauna,
P.O. Box 1383, Canberra A.C.T. 2601

In recent years I've often been asked questions about names supposedly published in "Colvill's Catalogues". Several 19th Century works, for example Sweet's Hortus Britannicus (Sweet, 1830), refer to names as being published in "Colvill's Cat" (see e.g. Grevillea berberifolia C.C. and Grevillea trifurcata C.C. on p.146 and Acacia leucophylla C.C. on p.165 and the reference to Colvill's Catalogue on p.xiv. If the names so cited were accompanied by a valid description in the Catalogue then it is obvious that many would predate names in common use today, with the resulting upsetting of much of our present nomenclature.

James Colvill owned a nursery in the King's Road, Chelsea in London and was well known during the first half of the 19th Century for his cultivation of plants from the New World. In the 1820s and 1830s he published several catalogues with slightly different titles.

The first, A Catalogue of Plants sold by James Colvill, Nursery and Seedsman, King's Road, Chelsea, near London was published in 1821. Two further editions appeared in 1823 and 1827. A copy of the 1st edition is held in the Jamaica Plains library of the Arnold Arboretum in Boston, Massachusetts. The U.S.D.A. library in Bettsville, Maryland has a copy of the 2nd edition, while copies of the 3rd edition are held by the Hunt Library in Pittsburg, Pennsylvania and at the Library of the Conservatoire at Jardin Botanique de Ville de Geneve in Geneva, Switzerland.

In 1831, Colvill published a further catalogue with the title A Catalogue of Garden, Flower, & Tree Seeds, Flower Roots, &c. &c. sold by James Colvill, Nursery and Seedsman, King's Road, Chelsea, near London. A copy of this catalogue was obtained from the Archives office of the Kent County Council, England, by David Mabberley.

All of these catalogues are merely lists of plants. From a nomenclatural point of view the names are all nomina nuda.

It is interesting, from a horticultural viewpoint, to note the extremely large number of Australian plants listed for sale in these catalogues. In the third edition of the Catalogue (1827), for example, there are over 350 Australian taxa cited in some 88 genera. These include 50 species of Acacia, 25 of Grevillea and 24 of Banksia.

ACKNOWLEDGMENTS

I would like to thank Dr David Mabberley of the Botany Department, Oxford University for finding a copy of the obscure 1831 publication and the staff of all the libraries cited above.

REFERENCE

Sweet, R. (1830). Sweet's Hortus Britannicus; etc., 2nd edn, London, James Ridgway.

AUSTRALIAN BOTANICAL LIAISON OFFICER 1984-1985

N.S. Lander
Western Australian Herbarium
George St., South Perth, W.A.

Following are some extracts from Nick Lander's ABLO Report:-

GEORGE BENTHAM TO FERDINAND VON MUELLER, KEW, 22 MAY 1861

My Dear Sir,

Since writing to you via Southampton the other day I have seen your letter to Sir William Hooker in which you seem to think that the Australian flora ought to be left entirely to you. I am perfectly aware of the indefatigable zeal and industry you have shown in the investigation of the vegetable production of Australia, of the high scientific ability you have shown in the varied and numerous botanical papers you have published - and that could you come over to this country for the purpose no one could nearly so well as yourself prepare the general flora that is so much wanted. Yet at the same time I feel also that to be satisfactory to the Botanical World it must be done in this country for nowhere else can the old species published - the collections of Brown, Cunningham and others be verified - and nowhere else can the tropical Australian flora especially be properly elucidated by a comparison with that of tropical Asia and Oceania and this I always considered to be the view you took of it yourself when in your letters to myself as well as to the Hookers you kindly expressed yourself so well pleased that the preparation of the flora should be entrusted to me. It appears to me that it would far more contribute to the advancement of the science itself as well as to the maintenance and furthermore of the high botanical reputation which you already possess, if you were to devote yourself to the completion of such work, on the splendid flora of Victoria which you have commenced and which cannot be done without the knowledge of the living plants and other advantages which you have - and if you were likewise to continue giving to the world the descriptions of the numerous additions you have made to the botanical treasury of Australia - whilst if you were to give up all these for the purpose of condensing the whole flora of our Continent into a few 8vo volumes you would find it both a thankless and hopeless task to accomplish without those aides which our herbaria afford. As for myself I cannot but feel that my position has given me peculiar facilities for the task, and since it was proposed to me to undertake it three years ago I have been in many ways preparing myself for it and I feel fully confident that if my health and faculties do not become impaired by age I shall easily get through a volume a year as I have offered to do. And I think that such a work got up in this country in which your contribution would be fully noticed, joined with the publication of your flora of Victoria and other works will spread far more widely the reputation you have so well earned than were you to devote your time to the work of compilation which would be so much retarded by the necessity of frequent reference to Europe where it would be very difficult to find persons competent to compare your specimens and solve your doubts except amongst those who have too many other occupations to devote themselves to the task.

Having said this much I leave the decision to other hands - the offer

to undertake the task having been made to me and accepted by me I feel loth to give it up - but as I said in my former letter, you are now coming on and either I must at once commence it or give it up entirely.

Ever yours very sincerely,

George Bentham

LIAISON WORK

Enquiries. A total of 138 letters were received involving liaison work. Following the report of the ABLO who preceded me I have classified these in several ways in an attempt to analyse the requests. Numerous other letters were received including those offering thanks for work done, those concerned with the administration of the ABLO position, those concerned with my own research and those concerned with work related matters in my home institution, the Western Australian Herbarium.

Table 1 - Sources of Enquiries (Letters)

ACT	NSW	NT	QLD	SA	TAS	VIC	WA	NZ	UK	EUR	TOTAL
20	18	-	18	11	-	15	44	1	7	4	138

Table 2 - Monthly Distribution of Enquiries (Letters)

Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
5	9	16	11	18	9	12	9	16	14	11	8

It is important to note that whilst some of these written enquiries involved me in less than a day's work many took considerably longer to research, up to a week in some cases. Several letters contained more than one enquiry.

The majority of liaison enquiries fall into one of five categories:

(i) Requests concerning type specimens, their location, label details, photography, critical examination and comparison with other specimens.

(ii) Requests concerning literature, its content, interpretation, publication details and photocopying.

(iii) Requests seeking expert opinion of nomenclatural, anatomical or other technical matters.

(iv) Requests for selection of loan material.

(v) Requests for identification of weed or horticultural species.

It is worth noting that almost without exception these enquiries were made in connection with ongoing work on the Flora of Australia project, one of the major projects of the Bureau of Flora and Fauna.

The enquiries from the United Kingdom and Europe reflect, in a small way, the service provided by the ABLO in supplying identifications and general information on Australian botany and related subjects such as botanical art, ecology, horticulture, agriculture, geography and climatology to officers from Australian State and Commonwealth Government Offices in London and to British and European scientists. Over and above the written ones several verbal enquiries were received each day, either in person or by telephone.

Other Liaison Duties. Apart from dealing with enquiries, other functions of the ABLO are:

(a) To provide assistance and hospitality for visiting Australian botanists or to non-British botanists working on groups of Australian plants.

The extent of my involvement ranged from providing the briefest introduction to meeting visitors at the airport, arranging accommodation for them or even having them to stay. Often, such visitors require considerable assistance in order to make the most effective use of their time. Amongst my visitors during the year were Jeremy Bruhl (NSW/ACT), Jim Willis (VIC), Laurie Adams (ACT), Les Pedley (QLD), Roger Carolin (NSW), Chris Quinn (NSW), Lawrie Johnson (NSW), Barbara Briggs (NSW), Bill and Robyn Barker (SA), Phillip Short (VIC), Peter Bridgewater (ACT), B.J. Walby (VIC), Peter Grayling (WA), Trevor Clifford (QLD), Don Blaxell (NSW).

(b) To provide critical scientific reviews for publications relevant to Australian botany. These may take the form of book reviews, two in my case for Kew Bulletin.

(c) To provide information and advice in one's own areas of expertise to Kew Staff and visitors.

During the year I was involved in extensive discussions concerning the projected Royal Society/Linnaean Society Expedition to Australia in the Bicentennial Year. My suggestion that the study area for this expedition should be the Kimberley Region of Western Australia was accepted by the British planning committee and by the executives of both societies involved: I understand that it has recently been ratified by the Australian Bicentennial Committee.

I was consulted on a number of occasions concerning the use of portable microcomputers for herbarium taxonomy: I understand that largely as a result of my advice Kew is now giving serious consideration to the purchase of several portable micro-computers for general herbarium use.

Towards the end of my term of office Kew was visited by a Mr David Powell who has made systematic collections of the Christmas Island flora totalling some 800 specimens. Mr Powell's suite of specimens is comprehensive and critical. Although duplicates are held at Kew they are not represented in any Australian herbarium. Now Mr Powell is leaving the island the future of his own set of specimens there is uncertain. As a result of my discussions with Mr Powell, Kew botanists and Robyn Barker (visiting Kew from Adelaide) a concerted effort was made to secure this

valuable collection for an Australian herbarium.

RESEARCH

The facilities in London for botanical taxonomic research are unrivalled by any other city in the world. The vast herbaria at Kew and at the British Museum are particularly rich in types of Australian taxa and other authentic specimens gathered early in our history that are not adequately accessible via the normal loan process. The library resources available in London are comprehensive to an extent simply not possible in Australia. Thus the ABLO's year at Kew provides superb opportunities for searching out and examining type specimens, studying early and rare references (including manuscript sources), and comparing of Australian taxa with taxa found elsewhere in the world. Further, the considerable ease of travel from other major European herbaria many of which hold material fundamental to the study of Australian plant taxonomy.

In my research work during the year I concentrated on studies of the genus Olearia (Asteraceae: Astereae) aimed at providing a Flora of Australia treatment by 1992 and a revision of the genus. About 100 species of Olearia are currently recognised in Australia: I estimate that at least a further 50 remain to be described. In connection with this project my year as ABLO enabled me to:

(i) Examine, catalogue and tentatively annotate all Olearia material held at the following British and Continental herbaria: British Museum (Natural History), Cambridge, Copenhagen, Edinburgh, Florence, Geneva, Kew, Leiden, Lund, Paris, Trinity College Dublin.

Although in theory it is possible to borrow most such collections from Australia the logistics of doing so would be formidable; more importantly, the burden placed on the various institutions involved would be intolerable. Many herbaria are, as a matter of policy, unable to make loans of their holdings available, for example the Candolle herbarium in Geneva and Trinity College Dublin; others have found it necessary to limit the number of specimens loaned at any one time, for example Kew and Paris.

Herbaria with large international collections lack the manpower to curate groups in which they have no specialist knowledge or interest, even where modern treatments are available. Thus the authoritative annotation of specimens from non-Australian herbaria is a vital aspect of communicating the results of revisionary studies to the international scientific community.

(ii) Search out, locate, annotate and photograph Olearia types.

In his ABLO report my predecessor, Surrey Jacobs, drew attention to the existence of a vast quantity of critical early type material not adequately accessible through the normal loan process. Some of the reasons why this should be so are worth repeating and amplifying here. Many such specimens are minimally annotated, filed incorrectly, under obsolete names or placed amongst unidentified material. They are often fragmented and mounted on several sheets. They are often not to be located in the herbarium where one would expect them but appear elsewhere where they were distributed prior to the formulation of the modern type concept. Types are often cryptic, requiring specialist knowledge of the handwriting, itineraries, numbering systems and label formats of early collectors and

botanists. A request for type material, if successful at all, often results in the retrieval of only part of the available material. Obviously typification problems and solutions to such problems can easily remain hidden. This is especially the case where lectotypification is involved. Thus the value of first hand experience with the European collections in revisionary studies in a genus as large as Olearia cannot be overestimated.

(iii) Select specimens to borrow for comparison with material from Australian herbaria and for further study in Perth.

I estimate that being able to examine collections in situ has allowed me to reduce by 85% the number of Olearia specimens it is necessary to borrow from non-Australian herbaria.

(iv) Search for, locate, examine and photocopy references not available in Australia.

This essential aspect of revisionary research is time-consuming and often frustrating in the extreme to tackle with Australian resources. The year as ABLO provided a unique opportunity to work extensively in several of the world's great botanical libraries, particularly those at Kew, British Museum (Natural History) and Geneva. I was able to examine virtually every reference containing protologues of Australian taxa included under Olearia, an essential preliminary to determining the identity and status of the hundreds of types and possible types encountered in the course of this study.

Three other projects benefited from my year as ABLO:

(a) I was able to examine material of genera in the Plagianthus alliance (Malvaceae: Malveae), namely Lawrencia, Plagianthus, Hoheria, Gynatrix and Asterotrichion. This is an extension of my revision of Lawrencia and is aimed at elucidating generic delimitation of genera in this group.

(b) At the herbaria in Lund and Geneva I was able to locate, annotate and catalogue all holdings of Asteraceae specimens collected in Western Australia by the nineteenth-century collector J.A.L. Preiss. These include a great many type specimens. A paper concerning the results of this investigation is currently in press.

(c) At the Chelsea Physic Garden in London I was able to locate and photograph a small book containing a numbered set of fragments of collections made by Allan Cunningham in connection with his "A specimen of the indigenous botany of the Blue Mountains" published in 1825 in "Geographic Memoirs on New South Wales: by various hands edited by Barron Field" (Murray, London). Many of these appear to represent type material of species described by Cunningham. The attention of the present Curator of the Garden was drawn to the significance of this book and arrangements made for its consignment to the British Museum (Natural History). An article on this is to be published in conjunction with Bruce Maslin of Perth who has additional notes on the Acacia specimens involved.

CONCLUSION AND RECOMMENDATIONS

The liaison service provided by the ABLO and the specific personal research goals achieved contribute much to redressing the problems so

clearly perceived by George Bentham in his eloquent letter to Ferdinand von Mueller cited at the opening of this report, problems caused by the immense distance between Australian botanists and much of their primary research material.

The formal roles of the ABLO are enhanced and extended by something which, although not so readily categorised, is of the utmost importance: the opportunity to meet and discuss taxonomic and other professional issues and to compare at first hand curatorial, research and administrative features of herbaria elsewhere with those prevailing in Australia.

I offer the following recommendation for the future of the ABLO scheme:

The ABLO scheme plays an essential role in maintaining the standards of plant taxonomic research in Australia. It is vital that it should be continued.

AN OVERLOOKED SYNONYM IN SARCOZONA (AIZOACEAE)

by P.I. Forster

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Generic limits in the Aizoaceae (especially in the genera often segregated in the Mesembryanthemaceae) have been the subject of much debate with the past tendency being to recognize many small genera, usually based on small differences in capsule structure (Schwantes et al. 1960). This preoccupation with capsular characteristics is now considered to have created a largely artificial classification system and anatomical data of various taxa of the family (particularly epidermal features) are now being utilised in generic circumscription (Ihlenfeldt & Hartmann, 1982).

Much of this excessive splitting into genera from the original Mesembryanthemum was undertaken by N.E. Brown and it was on his suggestion that Black (1934) described the new genus Sarcozona to accommodate Carpobrotus pulleinei J.M. Black. Blake (1969:7) distinguished between the two genera with a combination of floral and vegetative characters, the most useful being the style and ovary-cell numbers and epidermal cell structure. This generic circumscription has been followed by Prescott & Venning (1984) and apart from Gunniopsis Pax (Aizoaceae s.s.), Sarcozona (Mesembryanthemaceae s.s.) is the only endemic Australian genus of this primarily Southern African family.

Rowley (1978), favouring a broader generic concept (viz. "Splitting hairs is not confined to Europe and Africa: this genus was erected in Australia for species of Carpobrotus with 4-5 instead of 6-15 stigmas, and trifling differences in habit."), considered that Sarcozona would be better united with Carpobrotus and validly transferred Mesembryanthemum praecox F.Muell. to that genus. Inexplicably he did not also transfer S. bicarinata S.T. Blake. This combination was overlooked in the account of Prescott & Venning (1984).

The differences outlined by Blake (1969) between Carpobrotus and Sarcozona would seem to be of value in generic circumscription and it is

considered here that the recognition of two genera is warranted. The full synonymy for Sarcozona praecox is given below. Details of types are as given in Prescott & Venning (1984).

Sarcozona praecox (F.Muell.) S.T. Blake ex H. Eichler, Supp. J. M. Black's Fl. S. Australia 2nd edn. 134 (1965).

Mesembryanthemum praecox F.Muell., Linnaea 25: 384 (1853).

Carpobrotus praecox (F.Muell.) G.D. Rowley, Natl. Cact. Succ. J. 33: 9 (1978).

Carpobrotus pulleinei J.M. Black, Trans. & Proc. Roy. Soc. S. Australia 56: 40 (1932).

Sarcozona pulleinei (J.M. Black) J.M. Black, op. cit. 58: 176 (1934).

References

Black, J.M. (1934). Additions to the Flora of South Australia. No. 32. Transactions and proceedings of the Royal Society of South Australia 58: 168-186.

Blake, S.T. (1969). A revision of Carpobrotus and Sarcozona in Australia, genera allied to Mesembryanthemum (Aizoaceae). Contributions from the Queensland Herbarium No. 7: 1-65.

Ihlenfeldt, H.-D. & Hartmann, H.E.K. (1982). Leaf surfaces in Mesembryanthemaceae. In: D.F. Cutler, K.L. Alvin & C.E. Price (eds.) The Plant Cuticle Linnean Society Symposium Series 10: 397-423, Academic Press: London.

Prescott, A. & Venning, J. (1984). Aizoaceae. In: A.S. George (exec. ed.) Flora of Australia 4: 19-62, AGPS: Canberra.

Rowley, G.D. (1978). Reunion of some genera of Mesembryanthemaceae. National Cactus and Succulent Journal 33: 6-9.

Schwantes, G., Straka, H. & Ihlenfeldt, H.-D. (1960). The classification of Mesembryanthemums. In: H. Jacobsen (ed.) A Handbook of Succulent Plants 3: 951-955, Blandford Press: London.

THE IDENTITY OF GENOSIRIS ERIOSTEPHANA F. MUELL.

D. A. Cooke
State Herbarium, Adelaide

The following text was omitted from the article published in ASBS Newsletter 46 (March 1986).

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Geerinck, D.J. (1974). Revision of Australian Iridaceae. Bull. Jard. Bot. Etat 44: 29-60.

Mueller, F. (1869). Fragmenta Phytographiae Australiae 7. (Govt. Printer: Melbourne).

PERSONAL NEWS

"RETIREMENT"

Dr L.A.S. Johnson, FAA
Royal Botanic Gardens: Sydney

Dr L.A.S. Johnson retired as Director, Royal Botanic Gardens, Sydney on December 31st 1985 having had his 60th birthday during that year.

Lawrie became Director in 1972. During his thirteen years in the post there were major developments and reconstruction of the garden and herbarium as well as the development of the annexes at Mt. Wilson and Mt. Anand to make a complex which is of outstanding significance in botanical endeavour. The herbarium after many years with highly deficient facilities - lack of space, inaccessibility of specimens, fire risk and poor meeting places - has been incorporated in, replaced by and added to by a building produced with notable architectural skill which is a model of excellence as a modern facility.

Some of the innovations and developments have not yet been fully consummated and are still being actively taken to conclusion.

From the beginning of 1986 he became Director Emeritus of the Gardens.

He is continuing taxonomic activity, working with colleagues in the Herbarium and field in a number of areas.

A major part of his time in the next year or so will be spent completing a taxonomic revision of Eucalyptus which is scheduled for completion in 1987.

He has continuing interest in families of the Southern Hemisphere and has just completed the Casuarinaceae for the Flora of Australia.

He is continuing work on Juncus and also the Restionaceae as well as other groups and is looking forward to years of productive activity.

Dr Barbara Briggs is Acting Director pending the new Director, Professor Carrick Chambers, taking up duty in July this year.

We wish him well in "retirement".

Lindsay Pryor
Canberra.

AWARDS AND HONOURS

Clarke Memorial Medal: Professor Bryan Womersley

It was announced recently that the Council of the Royal Society of New South Wales had awarded the Clarke Memorial Medal for 1985 to Professor Bryan Womersley, of the Botany Department, Adelaide University. This award is in recognition of his outstanding achievements in the field of marine botany. Bryan is a member of the South Australian Chapter, and has numerous publications in taxonomy of Algae. ASBS congratulates him on this award, which was certainly well merited.

Australian Heritage Award: Mrs Enid Robertson

On April 18th last, the inaugural Australian Heritage Awards were presented in Sydney by the Governor General, Sir Ninian Stephen. These awards were co-ordinated by the Australian Council of National Trusts, and funded by the firm Jones Lang Wootton. The awards were divided into eight categories, covering topics such as Architecture, Media, Publishing, Local Government, and also including Nature Conservation. In this last category, the award was presented to Mrs Enid Robertson, who researched, developed and implemented "a comprehensive management plan for the Watiparinga Reserve, a plan which has served as the prototype for management plans for other small to medium sized nature reserves in urban areas". Enid was a founding member of the ASBS South Australian Chapter, and recently contributed a revision of the sea-grasses to Volume I of the South Australian Marine Flora. ASBS extends to Enid our congratulations on an award which was richly deserved!

B. Randell
Adelaide

Dr L.A.S. Johnson, FAA

On 1st May 1986 Dr Lawrie Johnson was elected a Fellow of the Australian Academy of Science. It is particularly pleasing to see his achievements recognised in this way since there has previously been very little representation of systematic botany in the Academy. It is also notable that there are very few Fellows who have achieved their main work at institutions other than universities or CSIRO.

Barbara G. Briggs (NSW)

OBITUARYKees van Steenis (1901-1986)

Professor Cornelis Gysbert Gerrit Jan van Steenis, Director of the Ryksherbarium at Leiden, the Netherlands, from 1962 till 1972, died on the 14th of May last at the age of 84, apparently after a short illness. Although officially retired from academic duties for many years, as Director of the Flora Malesiana Foundation he remained scientifically active till the very last. It is therefore no empty phrase to describe his passing as a genuine loss to the botanical world.

Shortly after World War II, while still employed at Bogor, Indonesia, by the then Dutch colonial administration, he visited a number of herbaria in Australian state capitals in order to arouse interest in collaboration with his newly started Flora Malesiana project. He made a second trip to Australia, together with his wife, in 1973, a year after his retirement. New Zealand was also included and this time full attention was given to the Australasian flora, which they found fascinating. Several ASBS members will remember them from that time as they travelled from state to state.

There is no doubt that Van Steenis will be long remembered in Australia through his writings as a plant-geographer with a wide range of interests, who paid particular attention to the Indo-Pacific area. Furthermore, as initiator of Flora Malesiana, and as its General Editor for about forty years, he has had much influence on those planning the much younger Flora of Australia. Many monographs and revisions of plants in the Southwest Pacific and Southeast Asian regions were inspired or stimulated by him, and these will continue to influence our floristic publications for many years to come.

Andrew Kanis

NOTES

BUREAU OF FLORA AND FAUNA

Four more BFF publications on plant topics have been published since the last Newsletter. They are listed in the "Recent Publications" section elsewhere in this Newsletter. Although the Bureau variously coaxes, cajoles, solicits, remonstrates, pleads, and variously wags, slaps, or crooks fingers at contributors, the growing number of "Bureau" publications is strong evidence of the fact that the decision of the Australian Government to establish the Bureau and the Flora Program was soundly based on real needs in the community. National and international criticism of published volumes has been constructive or complimentary. Sales of the Flora are healthy with over 16,000 copies of the first six volumes sold by early 1986.

The success of the program can continue for as long as contributors are willing to contribute, on time, in proper format. It is heartening to the editorial staff to see improvement in the quality of manuscripts, and all authors appreciate not having the fruits of their labours turned scarlet by editors' pens.

The next volume of the Flora to be published, Vol. 45, which includes Liliaceae, Haemodoraceae amongst others, has about 23 contributors. Coordinating the task has been a complex and demanding task. The volume is expected now to go to the publisher in August. The late entries have caused a delay of about six months. The end result looks like matching the high standard set by the first of the Monocot volumes, Vol. 46 of the Flora.

Roger Hnatiuk

CHAPTER NEWS

SOUTH AUSTRALIA

This chapter has been quite active this year. Meetings for the first half of the year included:

February 11th: Dr. H.S. Irwin gave an informative talk entitled "Botanical Experiences in Russia".

February 26th: A report on the Boden conference was presented by members who had attended, i.e. Mr D.E. Symon, and Drs W.R. Barker, R. Chinnock, L. Haegi, and B. Randell. A very spirited discussion ensued, which extended beyond our usual finishing time!

March 26th: Mr D.E. Symon gave a short report on an experimental investigation of the response of snails to the presence of thorns on their food plants.

Dr. D.C. Christophel gave a short account of a newly discovered deposit of plant fossils at Golden Grove near Adelaide. On April 6th, Dr Christophel led an excursion to Golden Grove, at which members and their families were able to assist in making collections from the deposit.

April 30th: Dr W.R. Barker presented a report of the palynological studies undertaken during his leave in Europe in 1985. He sampled more than 100 genera of Scrophulariaceae during this time.

May 28th: Prof P.G. Martin will be speaking on Plant Systematics in the Age of Molecular Biology.

June 29th: Mrs Ann Hardy will review aspects of the history of Cleland National Park.

Early in August, the Chapter looks forward to celebrating the launching of the Fourth Edition of the Flora of South Australia.

Barbara Randell

R E M I N D E RINFORMATION FOR CONTRIBUTORS

ASBS Newsletter welcomes short scientific contributions, comment, news items, reviews and notices relevant to systematic botany in the Australian region. However the Newsletter is not a vehicle for formal publication of plant taxonomy. Manuscripts should be typed, double spaced, on one side of the paper only. Institutional typing services are not available to the current editor; handwritten manuscripts and crowded, corrected or otherwise illegible material will be returned to authors for improvement. Authors are urged to have their manuscripts reviewed, wherever possible, by colleagues before submission. This is important for correction of fact as well as for spelling, grammatical and typographic errors.

SOCIETY BUSINESS

ASBS TENTH GENERAL MEETING

The tenth General Meeting of the Society will be held in Brisbane in conjunction with the ESA/ASBS Symposium on The Ecology of Australia's Wet Tropics.

VENUE: Physiology Lecture Theatre (Hawken Drive entrance), University of Queensland.

TIME: 4 p.m.

DATE: Tuesday, 26th August.

COUNCIL ELECTIONS - 1986/87 TERM

The following nominations have been received:

President:	BARBARA BRIGGS, National Herbarium of NSW
Vice-President:	JUDY WEST, Australian National Herbarium
Secretary:	LAURIE HAEGI, Botanic Gardens of Adelaide
Treasurer:	DON FOREMAN, National Herbarium, Melbourne
Councillors	MICHAEL CRISP, Australian National Botanic Gardens
(2 positions):	ROD HENDERSON, Queensland Herbarium

No ballot is therefore necessary for any position and the above-named are officers elect. They will be announced as the incoming Council in Brisbane.

NANCY BURBIDGE MEMORIAL LECTURE

David Symon - "A world survey of fruit types in the genus Solanum".
Tuesday, 26th August at 8 p.m. in Brisbane.

Laurie Haegi
Secretary.

PUBLICATIONS

Ecology of the Wet-Dry Tropics. Edited by M.G. Ridpath & L.K. Corbett, 333 pp, The Ecological Society of Australia Inc. (= Proceedings of the Ecological Society of Australia, Vol. 13.). This is the proceedings of a joint Symposium with the Australian Mammal Society in association with the Darwin Institute of Technology. Twenty-six papers are included. Available from Blackwell Scientific Book Distributors Pty. Ltd., 31 Advantage Road, Highett, Melbourne, 3190 at \$20 plus postage.

Flora of Australia Guide for Illustrators. April 1986, BFF, 17 pp. including 9 figures. Gives guidelines for the preparation of line

drawings, half-tone figures, colour figures and paintings for the cover and frontispiece of Flora volumes. A must for contributors and illustrators involved with preparing Flora illustrations; available on request from the Bureau of Flora and Fauna, GPO Box 1383, Canberra, ACT 2601.

Index to Type Specimens of Australian Lichens: 1800-1984. by Rex B. Filson, Fl. Fauna Series No.4, 317 pp, AGPS. A compilation of Australian type specimens giving information on the location of types, type citations and references to original descriptions, nomina nuda, new combinations, new names, invalid names and superfluous names. Available from AGPS bookshops at a price of \$16-90 (if they don't have stock, pester them!).

A Field Guide to the Larger Fungi of the Darling Scarp & South West of Western Australia. By Kevn Griffiths. 80 pp., Kevn Griffiths. An illustrated guide to the larger Fungi. One hundred and fourteen fungi are carefully painted and described to assist with their identification. Available from the W.A. Gould League, Herdsman Lake Wildlife Centre, Cnr. Selby St. and Moondyne Drive, Wembley 6014 W.A. at \$16.

Flora of Australia Vol. 46 - Iridaceae to Dioscoreaceae, 247 pp, AGPS. The first volume to appear on monocotyledons; contains nine families covering 56 genera and 226 species, and 26 newly described taxa. The larger families include the Xanthorrhoeaceae (10 genera, 99 species) and the Iridaceae (29 genera, 78 species of which 52 are introduced). Available from AGPS bookshops, at \$30 for hard cover or \$26 for soft cover.

A Preliminary Atlas of Mangrove Species in Australia. By John R. Busby & P.B. Bridgewater, Fl. Fauna Series No.5, 38 pp., AGPS. An Atlas mapping the distribution of 38 species of Mangrove. Available from AGPS bookshops at \$11.95.

Flora of South-Eastern Queensland Vol. 2. By T.D. Stanley & E.M. Ross, 641 pp, Queensland Department of Primary Industries. This volume contains the remainder of the families of dicotyledons not covered in Volume 1. Important families appearing in this volume include Myrtaceae and Asteraceae. The region covered by the flora is from the Queensland/New South Wales border east of Talwood north to the Dawes Range and Bundaberg area. Volume 3 which contains all the families of Monocotyledons will be published in 2-3 years time. Available from Queensland Department of Primary Industries Information Centre, GPO Box 46, Brisbane, 4001 at \$40 plus \$4 surface mail or \$10.50 airmail within Australia.

BOOK REVIEW

Jupiter Botanicus - Robert Brown of the British Museum. By D.J. Mabberley, Braunschweig, Verlag von J. Cramer, 499 pp, 64 fig., 24 col. pl., 1985, approx. DM 120.

"It is remarkable that this should be the first attempt at a full biography of Britain's greatest botanist. It is even more remarkable that the name of Robert Brown should be commemorated in a basic natural phenomenon, Brownian Movement, yet should be virtually unknown to the

public. The discovery of the cell nucleus and other cytological phenomena and the nature of pollination and fertilisation, the reform of plant classification, pioneer work in palynology - each of these, one would have thought, would have provoked a host of books."

With these words David Mabberley justifies his writing of this comprehensive biography.

The book is divided into four parts. The first part covers the period from Brown's birth in 1773 through to 1805 and deals with his early life and his journey to the New World.

Brown's life from early childhood in Scotland, where he was born, through his student days in Aberdeen and Edinburgh, his early days of plant collecting in the highlands of Scotland and his period in the Fifeshire Fencibles as an army surgeon are well covered in spite of the paucity of documentation on this early part of his life.

Five chapters (about 60 pages) are devoted to Brown's preparation and journey to Australia in the early years of the 19th Century. This period of Brown's life is of particular interest to us here in Australia and is well documented in the book.

The second part covers the period from 1805 through to 1820. Chapters cover Brown's relationship with the Linnean Society, his studies on the Natural System of Classification and production of his Prodromus Florae Novae Hollandiae, his period as Joseph Banks' librarian and his attempts to obtain a Chair of Botany at a Scottish University. A final chapter in this part deals with his study of the "Great Flower of Sumatra" - Rafflesia arnoldii.

Part three covers the period from 1820 to 1832 and deals mainly with Brown's study of the cell. It also covers well the many lesser known publications produced by Brown during these years as well as the development of his work with the microscope. Although Brown wasn't the first to discover the movement of molecules in solution later to be named "Brownian Movement" after him, he was the first to understand its significance. A large part of one chapter is devoted to this study. A further chapter covers his discovery of the nucleus and his work on the Asclepiadeae.

Brown travelled for much of this period lecturing on his discoveries throughout Europe. Mabberley deals well here with Brown's relationships with the other major European Botanists of the period.

The fourth part of the book covers the period from 1833 until his death in 1858.

This is a particularly interesting part of the book as it deals well with Brown's character and personality in his declining years with chapters entitled "Heaped with Honours" and "Old Bobby". The third chapter in this part deals with the many controversies that surrounded Brown throughout this period of his life.

An Epilogue - "Robert Brown: the Man and the Scientist" and a detailed Bibliography complete the main part of this book. The Bibliography, which takes up some 20 pages, proved to be a particularly important part of the book as it includes 50 of Brown's own papers. Mabberley has included new

information on the dates of publication of Brown's works. Of particular interest is 27 Mar. 1810 being given for Brown's Prodromus and 3 Apr. 1810 for his paper "On the Asclepiadeae" - previously the order of publication of these two papers, which include many overlapping names including some generic names, was reversed.

The book includes a comprehensive index.

Mabberley has relied heavily on original sources and in particular on the many unpublished letters and papers deposited in the British Library and in the British Museum (Natural History) in his attempt to reconstruct Brown's life. He has managed to bring out much of the personal side of Brown without, at the same time, losing site of historical accuracy.

Jupiter Botanicus is one of the best researched biographies that I've come across and includes very few errors in either fact or typography. An errata slip is included with some six errors noted. All other errors that I came across were typographic and minor (for example "detalis" on p.210 instead of "details", a "p" missing from "specimen" on p.273 and "cost" instead of "coast" on p. 278, etc.) and do not detract from the book in any way.

The one omission I found is that no mention is made in the book of the numbers put on Brown's specimens at the BM(NH) sometime after his death. These numbers have often been referred to as "Bennet Numbers" in the belief that Bennett had added them but recent evidence seems to suggest otherwise. The author might like to shed light on this in a subsequent paper.

I thoroughly recommend this book to anyone interested in the history of Science, exploration of Australia or in the biography of Australia's and perhaps the World's greatest Botanist. It is a most readable biography.

Arthur D. Chapman
Bureau of Flora and Fauna
GPO Box 1383, Canberra, ACT 2601

CONFERENCES, SYMPOSIA & EXCHANGES

THE ECOLOGY OF AUSTRALIA'S WET TROPICS

Ecological Society of Australia and Australian Systematic Botany Society joint symposium.

The aim of the symposium is to provide a better understanding of the biological diversity and the ecological processes which make tropical ecosystems different from their southern counterparts.

Dates: 25th - 27th August 1986

Venue: University of Queensland

Registration Fees:	until 7.7.86	after 7.7.86
Delegates	\$80	\$95
Accompanying Persons & Students	\$35	\$40

Further information contact: Julie Bartley, UniQuest Limited, Phone
(07) 377 2733

PROPOSED PROGRAM

MONDAY 25th August 1986

am: Official Opening

Speakers: Barlow - Evolution of Flora
Archer - Evolution of Fauna
Arthington & Hergeri - Queensland Wetlands
Ashkanasy & Morwood - Water Resources in north Queensland
Davie - Mangrove Architecture
Dieters - Mangrove Growth
Buckley - Barrier Reef Island Flora

pm:

Marsh - Dugong Ecology
Saenger et al. - Macrobenthos Ecology
Smith - Mangrove Seed Predation
Hill - Subtropical Butterfly Diversity
Irvine - Beetle Pollination
West et al. - Changes in Rainforest
Olsen & Lamb - Subtropical Rainforest Recovery
Nicholson - Rainforest Change
Unwin et al. - Post Cyclone Rainforest Recovery
Duff & Stocker - Light & Nutrients in Rain Forests
Abdulhadi & Lamb - Seed Stores in Rainforests

TUESDAY 26th August 1986

am: Concurrent Sessions

- . Poster Sessions
- . Ecology Open Forum
- . EVOLUTION & SYSTEMATICS OF AUSTRALIA'S TROPICAL FLORA

Speakers: Ashton - Patterns of species richness in Far Eastern Forests
Ramsay - Preliminary studies on the Sematophyllaceae
(Bryopsida) from north Queensland
Hicks - The geographic affinities of some north Queensland
rainforest liverworts
Jessup - Australian Annonaceae in an Asian-Pacific context
Foreman - Morphology of some Australian Monimiaceae s.l.
Wannan - Evolution in the Anacardiaceae and the affinities
of Australian genera

pm:

Symon - The phytogeography of New Guinea Solanum (Solanaceae)
Whiffin - Patterns of species relationships in Australian
Syzygium and allied genera (Myrtaceae)

Wilson - Evolution in the Xanthostemon suballiance
(Myrtaceae)

Barlow - Patterns of evolution in Melaleuca (Myrtaceae)

Kanis - Taxonomic changes in Australian Mimosaceae

General Meetings

- . ASBS
- . ESA

Nancy Burbidge Memorial Lecture

To be presented by David Symon, formerly of the
Agronomy Dept, Waite Agricultural Research Institute

WEDNESDAY 27 August 1986

am: Speakers: Specht - Terrestrial Ecosystems

Choat - Marine Ecosystems

Doley & Yates - Physiology & Meteorology in Rainforests

Keto - Centres of Endemism in Rainforest Flora

Stocker - Plant Diversity in Rainforests

Cassells - Rain Forest Management

pm:

Clarkson & Kenneally - Comparison of Cape York & Kimberley
Floras

Christophel & Green - Comparison of Rainforest & Tertiary
Leaf Beds

Bowman - Callitris in the Northern Territory

Press - Fire Frequency in the Northern Territory

Ramsay - Moss Reproductive Strategies

Richards - N-Metabolism on Fraser Island

Dierich - Tropical Grasses

Saxon & Tracey - Rainforest Proteaceae

Winter - Rainforest Mammal Ecology



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The Australian Academy of Science and the Australian Academy of Technological Sciences signed a Memorandum of Understanding with The Royal Society in 1985. The objective of the Memorandum is to foster cooperation in the natural and technological sciences (and such other fields as fall within their responsibilities) between Australia and the United Kingdom.

Application forms are available from:

International Exchanges Officer
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GPO Box 783
Canberra, ACT 2601
Telephone: (062) 47-3966

The deadline for applications is 1 September preceding the calendar year for which support is sought.



56th ANZAAS CONGRESS

26-30 January 1987

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Liaison Officer
Massey University

STOP PRESS

REQUESTS FOR LOANS FROM THE NATIONAL HERBARIUM OF VICTORIA (MEL)

The number of requests for the loan of specimens from MEL continues to grow as the taxonomic pace quickens and servicing loan requests has become the major preoccupation of the technical staff at MEL.

Despite a sustained effort, especially during the last decade, the majority of the specimens at MEL are still not mounted and many of the type specimens have not been segregated, a circumstance occasioned by the historically low level of staffing. It is the policy of MEL to send specimens out on loan only when they have been mounted and the necessity to mount specimens is one reason for the slow response to some loan requests. A second reason is because we endeavour to identify any type specimens so that they can be photographed before a loan is sent out.

The search for types is very time consuming as we invariably have to start from scratch by first locating all of the relevant literature. It would greatly facilitate the processing of loans if borrowers, when making a request, were to provide a list of all the taxa in question including synonyms and full details of their types or the types of their basionyms if type material is thought likely to be at MEL. This information is invariably in the possession of the person requesting the specimens. A number of botanists routinely provide this information when making a loan request and it is requested that others follow suit. Please help us to help service your loan requests.

J H ROSS

NATIONAL HERBARIUM OF VICTORIA

INDUMENTUM HANDBOOK

Copies of a preliminary draft of the Indumentum Handbook have been circulated for comment. If you have not received one and would like to - contact: Dr H.J.Hewson, Bureau of Flora and Fauna, Box 1383, Canberra, A.C.T., 2601.

The Society

The Australian Systematic Botany Society is an association of over 300 people with professional or amateur interest in Botany. The aim of the Society is to promote the study of plant systematics.

Membership

Membership is open to all those interested in plant systematics and entitles the member to attend general and chapter meetings and to receive the Newsletter. Any person may become a member by forwarding the annual subscription to the Treasurer. Subscriptions become due on the 1st January.

The Newsletter

The Newsletter appears quarterly and keeps members informed of Society events and news, and provides a vehicle for debate and discussion. In addition original articles, notes and letters (not exceeding ten pages in length) will be published. Contributions should be sent to the Editor at the address given below, preferably typed in duplicate and double-spaced. All items incorporated in the Newsletter will be duly acknowledged. Authors are alone responsible for the views expressed.

Notes

- ☐ The deadline for contributions is the last day of February, May, August and November.
- ☐ ASBS Annual Membership is \$13 (Aust.) if paid by 31st March, \$15 thereafter. Students (full-time) \$10. Please remit to the Treasurer.
- ☐ Advertising space is available for products or services of interest to ASBS members. Current rate is \$30 per full page. Contact the Newsletter Editor for further information.
- ☐ All address changes should be sent to the Treasurer or the Editor.

Editor et al.

Dr H.J. Hewson
Bureau of Flora and Fauna
G.P.O. Box 1383
CANBERRA, A.C.T. 2601

Typist: Margaret Barlow
Illustrator: Gillian Rankin

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